Claims

1. (Currently Amended) An optical network, comprising:

a first optical ring and a second optical ring, each optical ring operable to communicate optical traffic comprising a plurality of sub-bands;

the first optical ring comprising a first interconnect node, the first interconnect node operable to filter traffic in a first sub-band from the first optical ring for communication to the second optical ring; ~~and~~

the second optical ring comprising a second interconnect node, the second interconnect node operable to receive the filtered traffic in the first sub-band from the first interconnect node for communication in the second optical ring; and

a demux-mux module operable to selectively pass or terminate individual channels of the filtered traffic in the first sub-band before communication in the second optical ring.

2. (Original) The optical network of Claim 1, wherein the first interconnect node is operable to communicate the filtered traffic in the first sub-band to the second interconnect node without electrical conversion of the filtered traffic.

3. (Original) The optical network of Claim 1, wherein the first interconnect node is operable to communicate the filtered traffic in the first sub-band to the second interconnect node without amplification of the filtered traffic.

4. (Original) The optical network of Claim 1, wherein the first interconnect node comprises a plurality of cascaded sub-band filters operable to isolate traffic in the first sub-band from continued communication on the first optical ring through the first interconnect node.

5. (Canceled)

6. (Original) The optical network of Claim 1, wherein:

the second interconnect node is operable to filter traffic in the first sub-band from the second optical ring for communication to the first optical ring;

the first interconnect node is operable to receive the filtered traffic in the first sub-band from the second interconnect node for communication in the first optical ring; and

wherein the second interconnect node is operable to communicate the filtered traffic in the first sub-band to the first interconnect node without electrical conversion or amplification of the filtered traffic.

7. (Original) The optical network of Claim 1, wherein:

the second interconnect node comprises a hub node operable to selectively switch to the first optical ring traffic in the first sub-band from the second optical ring;

the first interconnect node operable to receive the switched traffic in the first sub-band from the second optical ring for communication in the first optical ring; and

wherein the second interconnect node is operable to communicate the switched traffic in the first sub-band to the first interconnect node without electrical conversion or amplification of the filtered traffic.

8. (Currently Amended) An optical network, comprising:

a first optical ring and a second optical ring, each optical ring operable to communicate optical traffic comprising a plurality of sub-bands;

the first optical ring comprising a first interconnect node operable to selectively switch to the second optical ring traffic in a first sub-band from the first optical ring; ~~and~~

the second optical ring comprising a second interconnect node, the second interconnect node operable to receive the switched traffic in the first sub-band from the first optical ring for communication in the second optical ring;

wherein the second interconnect node is operable to selectively switch to the first optical ring traffic in the first sub-band from the second optical ring; and

wherein the first interconnect node operable to receive the switched traffic in the first sub-band from the second optical ring for communication in the first optical ring.

9. (Original) The optical network of Claim 8, wherein the first interconnect node is operable to communicate the switched traffic in the first sub-band to the second interconnect node without electrical conversion of the filtered traffic.

10. (Original) The optical network of Claim 8, wherein the first interconnect node is operable to communicate the switched traffic in the first sub-band to the second interconnect node without amplification of the filtered traffic.

11. (Original) The optical network of Claim 8, wherein the first interconnect node comprises:

a demultiplexer operable to demultiplex optical traffic received into its constituent sub-bands;

a plurality of switch elements each operable to pass through for communication through the first interconnect node or switch to the second optical ring traffic in a respective sub-band; and

a multiplexer operable to multiplex traffic in each sub-band passed through for communication through the first interconnect node.

12. (Original) The optical network of Claim 8, further comprising a demux-mux module operable to selectively pass or terminate individual channels of the switched traffic in the first sub-band before communication in the second optical ring.

13. (Canceled)

14. (Currently Amended) A method for communicating traffic between optical rings, comprising:

communicating optical traffic through a first optical ring, the optical traffic comprising a plurality of sub-bands;

filtering, for communication to a second optical ring, traffic in a first sub-band from the first optical ring at a first interconnect node of the first optical ring;

receiving the filtered traffic in the first sub-band from the first interconnect node at a second interconnect node of the second optical ring for communication in the second optical ring; and

selectively passing or terminating at a demux-mux unit individual channels of the filtered traffic in the first sub-band before communication in the second optical ring.

15. (Original) The method of Claim 14, wherein the filtered traffic in the first sub-band is communicated to the second interconnect node without electrical conversion of the filtered traffic.

16. (Original) The method of Claim 14, wherein the filtered traffic in the first sub-band is communicated to the second interconnect node without amplification of the filtered traffic.

17. (Original) The method of Claim 14, further comprising isolating traffic in the first sub-band from continued communication on the first optical ring through the first interconnect node at a plurality of cascaded sub-band filters of the first interconnect node.

18. (Canceled)

19. (Original) The method of Claim 14, further comprising:

filtering, for communication to the first optical ring, traffic in the first sub-band from the second optical ring at a second interconnect node of the second optical ring;

receiving the filtered traffic in the first sub-band from the second interconnect node at the first interconnect node of the first optical ring for communication in the first optical ring; and

wherein the filtered traffic in the first sub-band is communicated to the first interconnect node without electrical conversion or amplification of the filtered traffic.

20. (Original) The method of Claim 14, further comprising:

selectively switching to the first optical ring traffic in the first sub-band from the second optical ring at the second interconnect node, wherein the second interconnect node comprises a hub node;

receiving the switched traffic in the first sub-band from the second optical ring at the first interconnect node for communication in the first optical ring; and

wherein the switched traffic in the first sub-band is communicated to the first interconnect node without electrical conversion or amplification of the filtered traffic.

21. (Currently Amended) A method for communicating traffic between optical rings, comprising:

communicating optical traffic through a first optical ring, the optical traffic comprising a plurality of sub-bands;

selectively switching, for communication to a second optical ring, traffic in a first sub-band from the first optical ring at a first interconnect node of the first optical ring;

receiving the switched traffic in the first sub-band from the first interconnect node at a second interconnect node of the second optical ring for communication in the second optical ring;

selectively switching, for communication to the first optical ring, traffic in the first sub-band from the second optical ring at a second interconnect node of the second optical ring; and

receiving the switched traffic in the first sub-band from the second interconnect node at the first interconnect node of the first optical ring for communication in the first optical ring.

22. (Original) The method of Claim 21, wherein the switched traffic in the first sub-band is communicated to the second interconnect node without electrical conversion of the filtered traffic.

23. (Original) The method of Claim 21, wherein the switched traffic in the first sub-band is communicated to the second interconnect node without amplification of the filtered traffic.

24. (Original) The method of Claim 21, further comprising:

demultiplexing at the first interconnect node traffic received into its constituent sub-bands;

passing through for communication through the first interconnect node or switching to the second optical ring traffic in the plurality of sub-bands at a plurality of switch elements, each of the plurality of switch elements passing through or switching a respective sub-band; and

multiplexing traffic in each sub-band passed through for communication through the first interconnect node.

25. (Original) The method of Claim 21, further comprising selectively passing or terminating at a demux-mux unit individual channels of the switched traffic in the first sub-band before communication in the second optical ring.

26. (Canceled)

27. (Original) An optical network, comprising:

a first optical ring, a second optical ring and a third optical ring, each optical ring operable to communicate optical traffic comprising a plurality of sub-bands;

the first optical ring comprising:

a first sub-band interconnect node operable to filter traffic in a first sub-band from the first optical ring for communication to the second optical ring;

a second sub-band interconnect node operable to filter traffic in the first sub-band from the first optical ring for communication to the third optical ring;

the second optical ring comprising a third sub-band interconnect node, the third sub-band interconnect node operable to receive the filtered traffic in the first sub-band from the first sub-band interconnect node for communication in the second optical ring; and

the third optical ring comprising a fourth sub-band interconnect node, the fourth sub-band interconnect node operable to receive the filtered traffic in the first sub-band from the second sub-band interconnect node for communication in the third optical ring;

wherein the first sub-band interconnect node is operable to communicate the filtered traffic in the first sub-band to the third interconnect node without electrical conversion or amplification of the filtered traffic; and

wherein the second sub-band interconnect node is operable to communicate the filtered traffic in the first sub-band to the fourth sub-band interconnect node without electrical conversion or amplification of the filtered traffic.

28. (Original) The optical network of Claim 27, wherein the first and second sub-band interconnect nodes each comprise a plurality of cascaded sub-band filters operable to isolate received traffic in the first sub-band from continued communication on the first optical ring through the first and second sub-band interconnect nodes, respectively.